

REMARKS

In view of the above amendments and the following remarks, reconsideration of the rejections contained in the Office Action of April 4, 2007 is respectfully requested.

By this Amendment, claim 29 has been amended. Thus, claims 29-56 are currently pending in the application. No new matter has been added by these amendments.

On page 2 of the Office Action, the Examiner rejected claims 29-36, 41, 50-53, 55 and 56 under 35 U.S.C. § 112, second paragraph, as being indefinite. In particular, the Examiner asserted that the phrase “when said steering column is deformed” renders the claim unclear because the word “when” presumes that deformation of the steering column will take place, but indicates that such an action is not previously recited in claim 29. In order to address this rejection, claim 29 has been amended to positively recite deformation of the steering column, and the word “when” has been removed from claim 29. Therefore, it is respectfully submitted that the rejection under § 112 is not applicable to amended claim 29.

Further, it is respectfully submitted that entry of the amendment to claim 29 would not raise new issues that would require further consideration by the Examiner. In particular, the amendment does not change the recitation that the shell unit, the console unit and the tilting part *have a structure and are arranged such that* the recited events occur upon deformation of the steering column. Therefore, the recited structure, and the function performed due to the arrangement of the recited structure in claim 29, has not been altered by the amendment to the formal recitation of the deformation of the steering column. It is also noted that these features of claim 29 have already been considered by the Examiner and deemed to be anticipated by the applied prior art, as indicated on page 9, lines 1-5 of the Office Action. Therefore, it is respectfully submitted that the formal amendment to claim 29 does not raise any new issues that would require further consideration by the Examiner.

On pages 2-7 of the Office Action, the Examiner rejected claims 29-36, 41, 50-53 and 55 under 35 U.S.C. § 102(b) as being anticipated by Manwaring et al. (US 6,419,269). In addition, on pages 7-8 of the Office Action, the Examiner rejected claim 56 under 35 U.S.C. § 103(a) as being unpatentable over Manwaring in view of Turner et al. (GB 2092967). For the reasons discussed below, it is respectfully submitted that the present claims are clearly patentable over

the prior art of record.

The discussion of the invention provided below makes reference to the specification and figures of the present application. However, these references are made only for the Examiner's benefit, and are not intended to limit the claims.

The present invention is directed to an adjustable steering column which, as described on pages 3-5 of the original specification, is designed to prevent the steering column from being displaced relative to a console unit in the event of an automobile accident. As shown in Figs. 4-6, the adjustable steering column includes a steering spindle 1, a shell unit 3 housing the steering spindle 1, and a console unit 4 which is fixed to a chassis. The console unit 4 has at least one side wall 5 which supports the shell unit 3. The adjustable steering column also includes a securing device operable between an engaged state and a disengaged state, with the securing device including a plurality of securing elements 17, 18, and a tension bolt 10 penetrating openings in the shell unit 3 and in the at least one side wall 5. When the securing device is in the engaged state, the shell unit 3 is unadjustably coupled with the console unit 4 by the securing elements 17, 18 engaging one another. When the securing device is in the disengaged state, the shell unit 3 is adjustable relative to the console unit 4 in at least one adjustment direction (e.g., in the direction of arrow 33 in Fig. 4).

The securing device also includes a tilting part 26 supported so as to be displaceable relative to a first one of the shell unit 3 and the at least one side wall 5 in one of the at least one adjustment direction, and so as to be nondisplaceable relative to a second one of the shell unit 3 and the at least one side wall 5 in the one of the at least one adjustment direction. One of (a) the tilting part 26 and (b) the first one of the shell unit 3 and the at least one side wall 5 includes clamping edges 36, and the other of (a) the tilting part 26 and (b) the first one of the shell unit 3 and the at least one side wall includes clamping faces 35.

As explained on pages 13 and 14 of the original specification, when the steering column is deformed in the one of the at least one adjustment direction, the tilting part 26 is torqued by the second one of the shell unit 3 and the at least one side wall 5 relative to the first one of the shell unit 3 and the at least one side wall 5 such that the clamping edges 36 dig into the clamping faces 35 so as to inhibit a displacement of the tilting part 26 in the one of the at least one adjustment direction.

Independent claim 29 recites an adjustable steering column comprising a steering spindle, a shell unit housing the steering spindle, and a console unit having at least one side wall which supports the shell unit, with the console unit being fixed to a chassis. The adjustable steering column of claim 29 further comprises a securement device operable between an engaged state and a disengaged state, with the securement device including a plurality of securing elements, and a tension bolt penetrating openings in the shell unit and in the at least one side wall. Claim 29 further recites that the shell unit, the console unit, the plurality of securing elements and the tension bolt have a structure and are arranged such that when the securement device is in the engaged state, the shell unit is unadjustably coupled with the console unit by the securing elements engaging one another, and when the securement device is in the disengaged state, the shell unit is adjustable relative to the console unit in at least one adjustment direction.

The securement device of claim 29 also comprises *a tilting part supported so as to be displaceable relative to a first one of the shell unit and the at least one side wall in one of the at least one adjustment direction, and so as to be nondisplaceable relative to a second one of the shell unit and the at least one side wall in the one of the at least one adjustment direction*. Claim 29 further recites that one of (a) the tilting part and (b) the first one of the shell unit and the at least one side wall includes clamping edges, and the other of (a) the tilting part and (b) the first one of the shell unit and the at least one side wall includes clamping faces. Claim 29 also recites that *the shell unit, the console unit and the tilting part have a structure and are arranged such that deformation of the steering column in the one of the at least one adjustment direction results in the tilting part being torqued by the second one of the shell unit and the at least one side wall relative to the first one of the shell unit and the at least one side wall such that the clamping edges dig into the clamping faces so as to inhibit a displacement of the tilting part in the one of the at least one adjustment direction*.

Manwaring discloses a locking system for an adjustable steering column which, as shown in Figs. 1 and 2, includes a compression bracket 28 welded to the upper jacket 16 of a steering column 10. The vertical side walls 30 and 32 of the compression bracket include telescopic slots 34 and 36, respectively. Manwaring also discloses left and right side rake brackets 38 and 44 which are bolted to the vehicle body frame. The left and right side rake brackets 38 and 44 include vertical rake slots 42 and 48, respectively. The compression bracket 28 is positioned

between the left and right side rake brackets 38 and 44, and a rake bolt 54 extends through the rake slot 42, the telescopic slots 34 and 36, and the rake slot 48. Manwaring also discloses that when the rake bolt 54 is tightened by a nut 56, the compression bracket 28 is held in a fixed position by friction. When the rake bolt 54 is loosened, the position of the steering column 10 can be adjusted in a rake direction and in a telescopic direction. Manwaring also discloses a first rake bolt retainer 82 which is secured to the nut 56.

However, Manwaring does not disclose *a tilting part supported so as to be displaceable relative to a first one of the shell unit and the at least one side wall in one of the at least one adjustment direction, and so as to be nondisplaceable relative to a second one of the shell unit and the at least one side wall in the one of the at least one adjustment direction*, as required by independent claim 29. In particular, Manwaring discloses that the steering column is adjustable in a telescopic direction (along the axis of the steering column in Fig. 1) and in a rake direction (approximately parallel to the telescopic direction, so that the steering column pivots about axis 62 in Fig. 1). As stated above, Manwaring also discloses that compression bracket 28 is fixed to the upper jacket 16 of the steering column 10, and that the left and right side rake brackets 38 and 44 are fixed to the vehicle body frame. Therefore, when the steering column is adjusted in either the telescopic or rake direction, the compression bracket will move with the upper jacket 16 relative to the fixed left and right side rake brackets 38 and 44.

As shown in Fig. 2, the rake bolt 54 extends through wedge locks 68 and 70 which are engaged with tooth tracks 64 and 66 of the telescopic slots 34 and 36, respectively, when the rake bolt 54 is in the locked position. When the rake bolt 54 is in the unlocked position (as shown in Fig. 4), the wedge locks 68 and 70 are disengaged from the tooth tracks 64 and 66 so that the position of the steering column can be adjusted. Further, the rake bolt retainer 82 includes a lip 86 which is slidable along a surface 88 of the right side rake bracket 44, and which prevents the rake teeth 78 of the wedge lock 70 from engaging the teeth 60 of the rake slot 48.

Thus, when the rake bolt 54 is in the unlocked position, the wedge locks 68 and 70 are disengaged from the tooth tracks 64 and 66, and the compression bracket 28 can be adjusted in the telescopic direction relative to the fixed left and right side rake brackets 38 and 44. Due to the lip 86 which engages the edge 88 of the side wall 46, and the two small protrusions opposing the lip 86 which engage the edge of the rake slot 48 (as shown in Fig. 2), Manwaring discloses

that the rake bolt retainer 82 is fixed (i.e., non-displaceable) in the telescopic adjustment direction. Further, because the rake bolt retainer 82 is engaged with the fixed right side rake bracket 44, the rake bolt retainer 82 is fixed (*i.e.*, non-displaceable) in the telescopic adjustment direction relative to both the side wall of the right side rake bracket 44 and the compression bracket 28.

In regard to the rake adjustment direction, Manwaring discloses that the lip 86 of the rake bolt retainer 82 slides along the surface 88 of the right side rake bracket 44. Therefore, the rake bolt retainer 82 is displaceable in the rake adjustment direction relative to the right side rake bracket 44. However, Manwaring also discloses that coil springs 110 and 111 (as shown in Fig. 2) urge the rake bolt retainer 82 upward to disengage the telescopic teeth 76 from the tooth rack 66 of the compression bracket 28 (column 4, lines 43-55). In addition, Manwaring discloses that there is “no physical guide” that holds the rake bolt 54 adjacent to the upper side of the telescope slots 34 and 36 (column 5, lines 15-16). Therefore, when the rake bolt 54 is in the unlocked position, the coil spring 111 urges the rake bolt retainer 82 and the rake bolt 54 upward relative to the compression bracket 28 such that the telescopic teeth 76 become disengaged from the tooth rack 66 of the compression bracket 28, and although the rake bolt 54 has been urged upward, the rake bolt 54 (and thus the attached rake bolt retainer 82) is displaceable in the rake direction because no physical guide holds the rake bolt 54 adjacent to the upper side of the telescope slots 34 and 36. Thus, Manwaring discloses that the rake bolt retainer 82 is displaceable in the rake adjustment direction relative to both the compression bracket 28 and the right side rake bracket 44.

As stated above, Manwaring discloses that the rake bolt retainer 82 is fixed (i.e., non-displaceable) in the telescopic adjustment direction relative to both the side wall of the right side rake bracket 44 and the compression bracket 28, and that the rake bolt retainer 82 is displaceable in the rake adjustment direction relative to both the side wall of the right side rake bracket 44 and the compression bracket 28. Therefore, Manwaring does not disclose a tilting part supported so as to be displaceable relative to a first one of the shell unit and the at least one side wall in one of the at least one adjustment direction, and so as to be non-displaceable relative to a second one of the shell unit and the at least one side wall in the one of the at least one adjustment direction, as required by independent claim 29.

In addition, Manwaring does not disclose that *the shell unit, the console unit and the tilting part have a structure and are arranged such that deformation of the steering column in the one of the at least one adjustment direction results in the tilting part being torqued such that the clamping edges dig into the clamping faces so as to inhibit a displacement of the tilting part in the one of the at least one adjustment direction*, as required by independent claim 29. In this regard, it is noted that on page 9 of the Office Action, the Examiner indicates that column 4, lines 1-10 of Manwaring discloses that the lip 86 of the rake bolt retainer 82 digs into the surface 88 of the side wall 46 to prevent the rake bolt retainer 82 from being displaced. However, it is noted that the description in column 4, lines 1-10 of Manwaring describes the function of the lip 86 and the rake bolt 54 in normal operation, and not during deformation of the steering column.

Rather, Manwaring does not disclose that deformation of the steering column causes the rake bolt retainer 82 to be torqued. Instead, Manwaring discloses that during deformation of the steering column, the rake bolt retainer 82 is designed to fracture such that wedge locks 68 and 70 can be moved forward so as to engage with the tooth racks 58 and 60 (column 4, lines 31-37). As shown in Fig. 6, the fracture of the rake bolt retainer 82 allows the compression bracket 28 to move the rake bolt 54 forward such that the wedge locks 68 and 70 engage the tooth racks 58 and 60. As stated above, the rake bolt retainer 82 is attached to the rake bolt 54, and therefore the rake bolt retainer 82 would also be displaced when the rake bolt 54 is moved forward after the rake bolt retainer 82 fractures. Therefore, Manwaring does not disclose that the rake bolt retainer 82 includes clamping edges (or clamping faces) that dig into clamping faces (or clamping edges) upon deformation of the steering column so as to inhibit a displacement of the tilting part in the one of the at least one adjustment direction, because Manwaring discloses that deformation of the steering column causes the rake bolt retainer 82 to fracture and be displaced toward the tooth racks 58 and 60 along with the rake bolt 54.

Therefore, it is respectfully submitted that independent claim 29, as well as claims 30-56 which depend therefrom, are clearly allowable over the prior art of record.

In view of the foregoing amendments and remarks, it is respectfully submitted that the present application is clearly in condition for allowance. An early notice to that effect is respectfully solicited.

If, after reviewing this Amendment, the Examiner feels there are any issues remaining which must be resolved before the application can be passed to issue, the Examiner is respectfully requested to contact the undersigned by telephone in order to resolve such issues.

Respectfully submitted,

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